

# Site

# Team

# Evaluation

# Prioritization

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RESPONSE SECTION 3

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PFIZER, INC.

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Volume 1 of 2

## CERCLA Report



**Illinois Environmental  
Protection Agency**

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ESI

**SITE TEAM EVALUATION PRIORITIZATION**  
**PFIZER, INC.**

**TABLE OF CONTENTS**

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SEP 25 1998

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<b><u>SECTION</u></b>	<b><u>PAGE</u></b>
<b>1.0 Site Background</b>	<b>1</b>
1.1 Introduction	1
1.2 Site Description	2
1.3 Site History	3
1.4 Regulatory Status	3
<b>2.0 Site Team Evaluation Prioritization Activities</b>	<b>4</b>
2.1 Reconnaissance Activities	5
2.2 Sampling Activities	6
2.3 Sampling Results	7
<b>3.0 Site Sources</b>	<b>8</b>
3.1 Contaminated Soil	8
3.2 Waste Piles	9
3.3 Surface Impoundment	9
<b>4.0 Migration Pathways</b>	<b>10</b>
4.1 Groundwater Pathway	10
4.2 Surface Water Pathway	11
4.3 Soil Exposure Pathway	13
4.4 Air Pathway	14
<b>5.0 Additional Risk Based Objectives</b>	<b>15</b>
5.1 Tiered Approach To Corrective Action Objectives (TACO)	15
5.1.1 TACO Soil Objectives	15
5.1.2 TACO Groundwater Objectives	18
5.2 Ecological Sediment Screening Benchmarks	20
<b>6.0 Figures and Tables</b>	

## **APPENDICES**

Appendix A 4-Mile Radius Map & Surface Water Map

Appendix B Target Compound List

Appendix C . Site Team Evaluation Prioritization Photographs

Appendix D Aerial Photograph Location Map of Pfizer Inc.

Appendix E Site Inspection Prioritization Analytical Results (under separate cover)



## 1. SITE BACKGROUND

### 1.1 INTRODUCTION

On April 1, 1998 the Illinois Environmental Protection Agency's (IEPA) Site Assessment Program was tasked by the U.S. Environmental Protection Agency (USEPA) to conduct a Site Team Evaluation Prioritization (STEP) of the Harcros Pigments\Pfizer, Inc. site. The STEP<sup>EST</sup> is performed under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 40 CFR, 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986.

Pfizer, Inc. was initially placed on the Comprehensive Environmental Response Compensation and Liability Inventory System (CERCLIS) in response to the facility not meeting RCRA standards. Additional CERCLA investigations include a Preliminary Assessment in 1984, a Screening Site Inspection in 1982, a Site Inspection Prioritization in 1994, and a Focused Site Inspection Prioritization in 1995.

In November of 1997 the Illinois EPA's CERCLA Site Assessment Unit prepared a Site Team Evaluation Prioritization (STEP) Workplan for the Pfizer, Incorporated site which was submitted to USEPA Region V offices for review. A site safety plan was also prepared at this time, and after being reviewed by the Illinois EPA's Office of Chemical Safety, the field activity portion of the inspection occurred on December 2 and 3, 1997. The CERCLA Inspection included the collection of nine shallow soil samples, two groundwater samples, two sediment samples and two surface water samples from Schoemberger Creek.

## **1.2 SITE DESCRIPTION**

The Pfizer, Inc. facility is located at 2001 Lynch Avenue East St. Louis, Illinois (Section 17, Township 2 north Range 9 west of the Third Principal Meridian). Coordinates of the property are 38 37' 50" Latitude and 90 07' 33" Longitude.

The facility under investigation is approximately 40 acres in size and is surrounded by a six foot security fence. Guarded gates were located on the southwest corner where the only access to the site can be obtained. A large portion of the property was active and covered by asphalt pavement and or manufacturing buildings. There is an area on the north part of the property, within the fenced area, which had piles of materials. The piles of material contained construction debris and broken pieces of asphalt. Iron waste and slag type materials were also observed in this area. The site representative was not knowledgeable about where this material came from or the chemical make up of this material.

Surface water is discharged from the northeast corner of the site and is regulated by an National Pollution Discharge Elimination System (NPDES) permit. An underground surface water discharge pipe extended from the site northeast approximately 0.5 miles to Schoenberger Creek. During the site reconnaissance, IEPA personnel observed the discharged pipe in the creek from which orange colored water was discharging into the creek.

A small wetland was observed along the northwest corner of the facility fence. During the site reconnaissance there were visual indications that orange material in the wetland were similar to the orange colored material on the Pfizer property.

Because the southern portion of the property was covered by buildings and or pavement, sample collection was limited to exposed soil on the north and east areas of the property . Surface

water drainage from the majority of the active portion was connected to the sanitary sewer system. Drainage of surface water, leaving the property, from the active portion of the site appeared to be directed to the local municipal sanitary system.

### **1.3 SITE HISTORY**

According to information gathered during the Site Inspection Prioritization report conducted by Black and Veech, the facility under investigation has been in operation since 1941. Historical information pertaining to how pigments were produced and operational activities was provided by facility personnel. The facility has been operated by Pfizer, Inc. until 1990 when the facility ownership was changed to Harcros Pigments. Harcros Pigments was currently operating the facility, at the time this CERCLA STEP investigation was conducted.

The facility produces inorganic pigments, red and yellow iron oxides, barium oxide, and magnetic pigments. Ingredients used to produce these products include: hydrochloric and sulfuric acid (pickle liquor) from the local steel industries. The acid is added to corrosion resistant tanks containing raw iron and the tank is heated for 18 to 24 hours. Iron salts result from the process which are further refined in the plant process. Wastes produced during facility operations include sludges and pigments, and waste iron from the pickle liquor process which are sent to a special waste landfill.

### **1.4 REGULATORY STATUS**

A CERCLA Preliminary Assessment (PA) was conducted on the Pfizer, Inc. facility in June 1981. There were no environmental violations noted at the time this investigation was conducted and

operating permits were obtained by the facility. A No Further Action Needed priority was assigned for the PA inspection. Despite the No Further Action designation, a Site Inspection Prioritization (SIP) was performed on the Pfizer facility in 1993. The purpose of the SIP was to update scoring site inspections, quantify threats and provide documentation for USEPA to decide appropriate actions for the site. There were no environmental samples collected during the SIP inspection, however a potential was noted for hazardous substances to exist. Pfizer, Inc. was assigned a higher priority for the Site Inspection Prioritization. In 1991, an underground fuel tank was removed from the facility property and was reported to be in good condition. Soil samples were collected at the time of the tank removal and detected xylene, benzene, and toluene in the 10 to 25 parts per billion range.

Given the years of operation and the federal and state environmental regulations which existed during this time, the site does not fall under the jurisdiction of the Atomic Energy Act (AEA), Toxic Substances Control Act (TSCA), Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), or the Uranium Mill Tailings Radiation Control Act (UMTRCA).]

According to the 1997 Resource Conservation Recovery Act (RCRA) report, only one hazardous waste is produced at the facility. Pfizer, Inc. was listed in June 1996 RCRA as a very small quantity generator. Approximately 15 gallons of waste paint are generated from the laboratory, per month, located on the facility property. Parts cleaning solvent generated on-site are picked up at the facility by a recycling company.

## **2. STEP ACTIVITIES**

This section contains information gathered during the preparation of the formal CERCLA Inspection and previous IEPA activities involving this site. These activities included the reviewing

of IEPA records, preparation of the work plan, and on-site interviews with Pfizer personnel.

## **2.1 RECONNAISSANCE ACTIVITIES**

On November 18, 1997 Mr. Brad Taylor of the Illinois EPA met Mr. Robert Lonsdale with Harcros Pigments. The site reconnaissance included a visual inspection of the property to determine the locations of site waste management and containment measures. The walk through inspection was also intended to determine appropriate health and safety requirements during on-site sample collection activities.

During the tour of the facility, Mr. Lonsdale described briefly how pigments are manufactured. A large portion of the facility property was covered by manufacturing buildings and asphalt pavement surrounding these buildings. Because most of the property soils were covered, the areas primarily focused on during this investigation were located on the north and east side of the property. The northwest portion of the property contained piles of material which Mr. Lonsdale mentioned this material was generated from construction projects on the property. Materials observed in the piles appeared orange and yellow in color and resembled raw ore type materials.

The surface contour of the Pfizer property appeared to be basically flat. A sewer system under the paved roads on the property collects surface water from the facility and is discharged into the local sewer near the southwest corner of the property. A second discharge point to the local sewer system was located at the southeast corner of the property. Surface water runoff from the east and north portion of the property collect in a low area known as Pickens Pond, located on the east side of the property. Wastewater and sludges from the wastewater treatment plant are also discharged into Pickens Pond. The sludges observed in the pond were very red in color. A discharge pipe was observed at the south end of Pickens Pond which discharged surface water to the sanitary sewer.

Three groundwater wells were located on the property and used in manufacturing of pigments. Groundwater was used throughout the facility for non-contact cooling purposes, according to Mr. Lonsdale. Once the cooling water is used, within the manufacturing process, it is pumped to a discharge point located on the east side of the property. The discharge water is regulated by a NPDES Permit. Water parameters are monitored for wastewater leaving the facility. When the wastewater is discharged from the facility it enters an underground pipe which empties into Schoemberger Creek, located approximately one mile northeast of the Pfizer, Inc..

## **2.2 SAMPLING ACTIVITIES**

On December 2 and 3, 1997, IEPA personnel collected a number of environmental samples. Eight shallow soil samples were collected from the property. All soil sample locations were selected to determine if hazardous contaminants were present on the facility and adjacent migration routes. Two groundwater samples were also collected with a Geoprobe unit around the perimeter of the property to determine whether past site activities are impacting local groundwater. One surface water sample and a sediment sample were collected from the surface water discharge point. Surface water was discharged from the property through a pipe which empties into Schoenberger Creek. Surface water and sediments were collected upstream of where the discharge pipe enters Schoenberger Creek in an attempt to determine whether the Pfizer facility was impacting the creek.

Harcros Pigment representatives were given the opportunity to collect split samples in conjunction with IEPA sample collection. Harcros Pigment representatives elected to collect split samples and were present at the time when IEPA personnel conducted the sampling event. Only those samples collected on the facility property were split with Harcros representatives. IEPA personnel were not accompanied by Harcros representatives during sample collection off of the

Pfizer property.

## **2.3 SAMPLING RESULTS**

Following sample collection, all samples were transferred to containers provided by IEPA's Contract Laboratory Program. The sample containers were packaged and sealed in accordance with IEPA's Bureau of Land Sampling Procedures Guidance Manual. Samples requiring an organic analysis were sent to Ceimic Corporation in Narragansett, Road Island. Samples requiring inorganic analysis were sent to Sentinel Inc. in Huntsville, Alabama. All received a quality assurance review known as Computer Aided Data Review and Evaluation, CADRE 2.3.1. A complete analytical data package for Pfizer, Inc. is located in Appendix E (volume 2 of the STEP report).

As illustrated in Table 2.0, laboratory analysis of the on-site soil samples revealed the presence of semi-volatiles and inorganic contaminants at levels the significantly exceeded background concentrations.

Table 2.0 illustrates the laboratory analysis of sediment samples collected from Schoenberger Creek. The results indicate that elevated concentrations of acenaphthene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, bis(2ethylhexyl)phthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indo(1,2,3-cd)pyrene, benzo(g,h,i) perylene, dieldrin and cadmium exist within the sediments of Schoenberger Creek.

The laboratory analysis of groundwater samples are illustrated in Table 2.1. The results indicate that volatiles, semi-volatiles and inorganics constituents are present in the groundwater under the Pfizer facility. A background groundwater sample was not collected during this STEP investigation.

### **3.0 SITE SOURCES**

Information obtained through the CERCLA activities identified contaminated soil, waste piles and surface impoundment as the source types at the Pfizer facility. Due to the limited scope of these screening activities, the possibility exists that further investigation of the property could reveal additional information that would further characterize this source, or lead to the identification of additional sources.

#### **3.1 CONTAMINATED SOIL**

During the 1997 STEP Inspection surface soil samples were collected on the Pfizer, Inc. property to characterize the soil. Surface soil contamination was found which contained a number of Target Compound List compounds and Target Analyte List analytes.

Table 2.0 illustrate the contaminants detected in the samples collected during the STEP investigation. Semi-Volatile, pesticides and inorganic contaminants were elevated above background concentrations. Samples collected from Pfizer, Inc. property, during the STEP investigation, contained chromium levels which exceeded CERCLA Program Removal Action Levels. Samples X107, X108 and X109 were used to delineate the extent of soil contamination and was estimated to be 126,200 square feet of contaminated soil.

A potential exposure route to contaminated soil on the facility exists since the facility is still in operation and workers are exposed to on-site soils. Approximately 350 people are currently employed by Harcros Pigments. The north and east areas of the property, within the property fence, were not vegetated during sample collection.

A potential for human exposure exists because the contaminants found in the sediment samples have migrated to Schoenberger Creek. Semi-Volatiles, pesticides and inorganic



contaminants found in soils on Pfizer property were also detected at the surface water discharge point in Schoenberger Creek. Soil contamination found in the surface water pathway was accessible to the public since Schoenberger Creek was not secured with a fence.

### **3.2 WASTE PILES**

The area on the northwest corner of the property contained piles of construction debris and broken asphalt. Two surface soil samples, X102\X103 and X104, were collected from the waste piles. Analytical results revealed that contamination was present at these two locations at least three times background concentrations. Using a scaled aerial photograph the approximate boundary of the waste piles was estimated to be approximately 62,500 square feet.

### **3.3 SURFACE IMPOUNDMENT**

Three shallow soil samples were collected during the CERCLA STEP in the area on the east side of the property known as Pickens Pond. Samples X105, X106 and X107 were collected within three inches of the surface. Analytical results revealed that contamination was present at each of these locations in concentrations at least three times background levels. The sample locations detected elevated levels of PAH's, PCB's and inorganic contaminants. A discharge pipe was observed near the south end of the pond which discharged surface water and sediments, within the pond, to the municipal sanitary sewer.

The area of the surface impoundment was determined to be approximately 11,250 square feet using a 1988 aerial photograph.

#### **4.0 MIGRATION PATHWAYS**

The CERCLA Site Assessment Program identifies three migration pathways and one exposure pathway, as identified in CERCLA's Hazard Ranking System, by which hazardous substances may pose a threat to human health and/or the environment. Consequently, sites are evaluated of their known or potential impact to these pathways. The pathways evaluated are groundwater migration, surface water migration, soil exposure, and air migration.

#### **4.1 GROUNDWATER PATHWAY**

The geology of East St. Louis is known as "American Bottoms" which consists of unconsolidated alluvial material approximately 120 feet thick. These alluvial deposits are composed of primarily silt, clay and fine sand deposits. Glacial valley train deposits underlie the fine alluvial deposits and are predominantly sand and gravel. The glacial sand and gravel layers provide most of the groundwater used in the East St. Louis area.

Beneath the glacial deposits lies Mississippian age Bedrock. This bedrock formation consists of layers of limestones, sandstones, shales, siltstones, and dolomites. Several bedrock formations exist of the limestone, shale and dolomite overlying a basement granitic crystalline rock (Selkregg, 1957).

Local drinking water in the near vicinity of Pfizer, Inc. was supplied by the Illinois American Water Company. The Illinois American Water Company use the Mississippi River as a source for drinking water. Surface water intakes are located upstream of where surface water drainage from the facility would enter the Mississippi River. One group of municipal drinking groundwater wells were located within the four mile target distance limit. These five wells are located approximately three

and a half miles northeast of Pfizer, Inc. property and serve the city of Collinsville. These wells range in depth from 98 to 108 feet and obtain water from the shallow glacial deposits. Although these wells are located within glacial deposits, the potential risk of being contaminated from the Pfizer site is low. The general groundwater flow for the East St. Louis area was determined to flow toward the southwest, away from Collinsville wells. Because there were no wells identified within the downgradient groundwater flow, offsite groundwater samples were not collected.

Groundwater samples collected on Pfizer property at 28 feet, during the CERCLA investigation, revealed semivolatiles, pesticides and inorganics. Table 2.1 illustrates a summary of the contaminants detected in the groundwater samples. Iron was the only contaminant detected in groundwater samples from the Pfizer property which exceeded the Maximum Contaminant Level for Drinking Water Benchmark. Iron concentrations detected in groundwater samples did not exceed Superfund Chemical Data Matrix Drinking Water Benchmarks.

#### **4.2 SURFACE WATER PATHWAY**

The Probable Point of Entry (PPE) for the surface water pathway, in relation to this facility begins approximately 2000 feet downstream of where the Pfizer drainage pipe empties into Schoenberger Creek. Schoenberger Creek was listed as an intermittent creek which flowed in a northwest direction for approximately 1.5 miles until it met the Cahokia Creek. Wetlands located in Schoenberger Creek, approximately 1 mile upstream from Cahokia Canal meet the HRS definition of a PPE. Cahokia Canal travels in a southwest direction before joining the Mississippi River for the remainder of the 15 mile Target Distance Limit (TDL) (Appendix A).

Several targets were found to exist within the 15 mile target distance limit. According to the

National Wetlands Inventory maps approximately eight miles of wetland frontage are found within the TDL, mostly located in the Mississippi River. The Cahokia Canal and the Mississippi River are used as a fisheries according to Illinois Department of Natural Resources. Also, the Mississippi River is used for recreational purposes.

There were two surface water samples and two sediment samples collected from Schoenberger Creek during this CERCLA investigation. Samples were collected from Schoenberger Creek to determine whether contaminants have migrated from the Pfizer property. During this inspection: acenaphthene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, bis(2-ethylhexyl)phthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, the following semivolatiles were detected in the sediments where Pfizer, Inc. discharged into Schoenberger Creek. Pesticides were detected at Pfizer's discharge pipe, although they do not appear to be coming from the facility since the concentrations are lower on the facility property and pesticides were not produced by the pigment facility. Inorganic contaminants detected in the sediments include cadmium, chromium, and zinc. Contaminants listed in the sediments were detected at least three times and/or above background sediment concentrations.

Surface water samples collected at the outfall from Pfizer discharge pipe were compared to a surface water sample collected upstream. Aluminum, chromium, and zinc were the only contaminants which were detected at least three times and/or above background concentrations. Samples collected in the overland flow path during this investigation were collected upstream of the PPE, therefore a potential release to the surface water is documented. Further investigation of the surface water pathway may reveal contaminants at the PPE within Schoenberger Creek.

### **4.3 SOIL EXPOSURE PATHWAY**

The soil on the facility property and much of East St. Louis surrounding the property generally consisted of urban land which was nearly level or gently sloping. According to the St. Clair County Soil Survey, soil conditions classified as urban land were covered by buildings and pavement. Buildings and paved areas are said to make up 75 percent of the property. Soil classification east of the facility, consist of silty urban soil covered mostly by buildings and pavement. The substratum of the general area was sandy which results in a high permeability and makes groundwater more susceptible to soil contaminants.

The potential for the public to come in contact with exposed soils within the Pfizer facility is low because the site was completely fenced and locked when site personnel are not present. A potential does exist for workers on the property to come into direct contact with contaminants detected in soil and sediments. Also the public could be exposed to contaminants found in the overland flow segment of the surface water pathway leading away from the Pfizer Inc. property due to contaminants found in the sediments. The nearest residence to the facility was approximately 350 feet west. The closest school to Pfizer, Inc. was approximately 1200 feet west. According to the 1993 CERLCA Site Inspection Prioritization there are approximately 2,914 people within one mile of the facility.

Table 2.0 lists a summary of the contaminants found in the soil samples taken on Pfizer property. A background soil sample was collected in Jones Park which was located south of the Pfizer facility. Levels of semi-volatiles, pesticides, and inorganic constituents were detected at least three times above background concentrations. Benzo(a)pyrene, dieldrin, arochlor-1254 and arsenic listed in Table 2.0 exceeded the benchmarks established for the soil exposure pathway in Superfund

Chemical Data Matrix.

#### **4.4 AIR PATHWAY**

No formal air samples were collected, nor were any air releases observed during the field inspection. During the CERCLA investigation air monitoring readings taken with a Toxic Vapor Analyzer during soil sample collection from the property were not elevated compared to background concentrations.

The presence of semi-volatiles, pesticides and inorganic constituents in the soil and sediment samples creates a potential for contaminants to be carried away from the facility. Areas of where surface soil samples were collected were not well vegetated.

##### **Nearby population within one-mile of Pfizer, Inc.**

Distance (miles)	Population
On-site	98
1\4 to 1\2	767
1\2 to 1	2,049
1 to 2	8,200
2 to 3	4,599
3 to 4	9,599

The population of East St. Louis, Illinois consists of approximately 55,200 people and the population within one mile of the facility is approximately 2,914 people. No shallow residential soils were collected during this STEP inspection.

## **5.0 ADDITIONAL RISK BASED OBJECTIVES**

This section provides a comparison of data generated during STEP activities with additional analytical benchmarks. These benchmarks compare soil, sediment, and/or groundwater data with specific risk based criteria. The objectives discussed in this section have not been used to assess the site for Hazard Ranking System purposes.

### **5.1 TIERED APPROACH TO CORRECTIVE ACTION OBJECTIVES (TACO)**

The Illinois EPA's TACO guidance document (which became final effective July 1, 1997), can be used to develop site specific remediation objectives for sites being addressed under the Illinois Site Remediation Program. This document discusses key elements required to develop risk-based remediation objectives, how background values may be used, and provides guidance through three tiers of the risk-based approach. The Illinois EPA uses this guidance, and the groundwater standards established in 36 IL Adm. Code 620, to determine soil and groundwater remediation objectives.

#### **5.1.1 TACO Soil Objectives**

The soil contaminants from the 1997 CERLCA investigation has been compared to the soil corrective action objectives established for industrial\commercial properties, with the inhalation, ingestion, and migration to groundwater pathways each evaluated. Tier 1 consists of "look-up" tables, which considers limited site-specific information and are based on simple numeric models. Methylene Chloride, benzo(a)pyrene, gamma-BHC, dieldrin, arsenic, chromium and lead are contaminants found on-site which exceeded the TACO Tier 1 corrective

action objectives. The background soil sample also contained dieldrin and arsenic concentrations which exceeded the TACO Tier 1 values. A table representing a comparison of soil samples to TACO objectives is found below.



SITE NAME: PFIZER, INC.

## TACO SOIL OBJECTIVES

D006317119

SAMPLING POINT	X101 Backgrd.	X102	X103	X104	X105	X106	X107	X108	X109
PARAMETER									
<b>VOLATILES</b> ug/kg or ppb									
Methylene Chloride	17.0	-	25.0 J	9.0 J	5.0 J	7.0 J	4.0 J	21.0 J	10.0 J
Acetone	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	3.0 J
2-Butanone (MEK)	-	-	-	-	-	-	-	-	-
Toluene	-	4.0 J	-	-	-	-	-	-	-
Xylene(total)	-	-	-	-	-	-	-	-	-
<b>SEMIVOLATILES</b> ug/kg or ppb									
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-
Naphthalene	-	3200.0 J	2600.0 J	690.0 J	-	-	400.0 J	-	-
2-Methylnaphthalene	-	7600.0 J	7800.0 J	1500.0 J	-	-	650.0 J	-	-
Dimethylphthalate	-	-	-	-	4500.0	-	-	-	-
Acenaphthene	-	-	-	-	-	-	-	-	-
Dibenzofuran	-	-	2900.0 J	410.0 J	-	-	530.0 J	-	-
Diethylphthalate	-	-	-	-	-	-	-	-	-
Fluorene	-	-	-	-	-	-	-	-	-
Phenanthrene	120.0 J	2900.0 J	3600.0 J	1400.0 J	960.0 J	670.0 J	2700.0	-	1000.0 J
Anthracene	-	-	-	-	-	-	510.0 J	-	-
Di-n-Butylphthalate	-	-	-	-	-	-	-	-	-
Fluoranthene	170.0 J	-	-	460.0 J	2300.0	770.0 J	2400.0	580.0 J	1600.0 J
Pyrene	130.0 J	-	-	490.0 J	2500.0	740.0 J	2400.0	-	1700.0 J
Benzo(a)anthracene	71.0 J	-	-	230.0 J	1200.0 J	360.0 J	970.0 J	-	820.0 J
Chrysene	99.0 J	-	-	300.0 J	1300.0 J	380.0 J	1000.0 J	-	1000.0 J
bis(2-Ethylhexyl)phthalate	-	-	-	-	-	-	-	-	1400.0 J
Benzo(b)fluoranthene	150.0 J	-	-	260.0 J	1700.0 J	540.0 J	1300.0 J	-	1400.0 J
Benzo(k)fluoranthene	48.0 J	-	-	-	730.0 J	340.0 J	360.0 J	-	-
Benzo(a)pyrene	71.0 J	-	-	-	880.0 J	340.0 J	830.0 J	-	760.0 J
Indeno(1,2,3-cd)pyrene	61.0 J	-	-	-	740.0 J	330.0 J	440.0 J	-	-
Benzo(g,h,i)perylene	58.0 J	-	-	-	530.0 J	320.0 J	370.0 J	-	-
<b>STICIDES</b> ug/kg or ppb									
gamma-BHC (Lindane)	-	-	-	-	-	-	-	-	16.0 J
Heptachlor epoxide	-	4.8 J	6.6 J	-	-	-	-	-	-
Dieldrin	17.0	7.1 J	11.0 J	-	-	-	5.1 J	43.0 J	26.0 J
4,4'-DDE	-	4.4 J	-	-	-	-	-	-	-
Endosulfan II	-	12.0 J	6.4 J	-	-	-	10.0 J	-	-
4,4'-DDD	-	-	-	-	-	-	-	-	-
4,4'-DDT	-	-	-	-	-	-	-	-	-
Endrin Ketone	-	6.5 J	6.0 J	-	-	-	-	-	-
alpha-Chlorodane	-	3.3 J	-	-	-	-	-	-	-
gamma-Chlorodane	-	15.0 J	15.0 J	-	-	-	-	-	-
Aroclor-1254	-	-	-	-	100.0 J	-	-	66.0 J	90.0 J
<b>INORGANICS</b> mg/kg or ppm									
Aluminum	12900.0	2510.0	2320.0	2840.0	5470.0	4950.0	11000.0	5970.0	3790.0
Antimony	-	14.5 J	12.0 J	3.8 J	3.6 J	2.4 J	2.9 J	-	3.2 J
Arsenic	3.9 J	43.6 J	41.9 J	10.2 J	5.6 J	7.2 J	7.4 J	26.7 J	1.4
Barium	316.0	3040.0	2550.0	2580.0	3730.0	16400.0	6020.0	7900.0	9890.0
Beryllium	0.7	0.3	0.4	0.2	0.3	0.3	0.9	0.6	0.3
Cadmium	1.7	4.8	4.5	8.1	5.5	15.4	4.7	8.3	14.1
Calcium	6090.0 J	3860.0 J	4030.0 J	31800.0 J	3660.0 J	36600.0 J	22600.0 J	5530.0 J	15400.0 J
Chromium	16.2 J	2570.0 J	2140.0 J	636.0 J	646.0 J	432.0 J	96.8 J	468.0 J	625.0 J
Cobalt	9.6	13.6	12.8	30.4	15.3	81.2	25.7	44.5	91.3
Copper	28.6 J	578.0 J	527.0 J	193.0 J	241.0 J	178.0 J	101.0 J	214.0 J	180.0 J
Iron	18200.0	-	-	199000.0	-	-	70200.0	303000.0	-
Lead	81.8	185.0	168.0	134.0	212.0	185.0	282.0	401.0	178.0
Magnesium	3300.0 J	423.0 J	431.0 J	2040.0 J	1770.0 J	3220.0 J	2630.0 J	1070.0 J	1950.0 J
Manganese	491.0 J	206.0 J	200.0 J	364.0 J	384.0 J	4000.0 J	1480.0 J	376.0 J	704.0 J
Mercury	-	0.4	0.5	0.2	-	0.8	0.3	1.6	2.9
Nickel	20.9 J	150.0 J	134.0 J	56.3 J	70.9 J	158.0 J	51.2 J	124.0 J	108.0 J
Potassium	2650.0 J	552.0 J	552.0 J	687.0 J	1060.0 J	895.0 J	1510.0 J	1180.0 J	430.0 J
Selenium	1.2 J	7.1	8.9	6.3	7.6	11.4	4.5 J	17.8	11.4
Silver	1.1	6.4	6.4	2.8	6.5	7.0	3.9	14.6	6.0
Sodium	139.0 J	461.0	479.0	1450.0	1460.0	1540.0	2550.0	862.0 J	621.0 J
Thallium	0.8	0.7	0.8	0.6	0.8	1.1	0.8	2.7	1.0
Vanadium	28.7	78.3	64.4	22.2	34.4	21.9	33.3	43.4	21.3
Zinc	171.0 J	244.0 J	221.0 J	258.0 J	246.0 J	565.0 J	418.0 J	1030.0 J	3440.0 J
Cyanide	0.7 J	0.1 J	0.1 J	0.4 J	0.1 J	0.8 J	2.6 J	0.6 J	0.2 J

urce: Tiered Approach To Corrective Action Objectives (TACO) Tier 1 industrial/commercial properties.

\* Bold concentrations are those which exceed the TACO Tier 1 industrial/commercial value.

NA - Benchmark Not Available

### 5.1.2 TACO Groundwater Objectives

Groundwater in the East St. Louis area according to Illinois Administrative Code 620 meets the Class 1 groundwater definition. Class 1 potable groundwater must have unconsolidated sand, gravel or sand and gravel which is 5 feet or more in thickness. Groundwater samples collected from the Pfizer property contained concentrations of iron, manganese and thallium which exceeded the Class 1 groundwater corrective active objectives.

SITE NAME: PFIZER, INC.

ILD 006317119

TACO GROUNDWATER OBJECTIVES

SAMPLING POINT		G101	G102	G103	F.B.	T.B
PARAMETER						
VOLATILES						
ug/l or ppb						
Methylene Chloride		1.0 J	--	--	6.0 J	--
Acetone		5.0 J	--	--	--	5.0 J
2-Butanone (MEK)		1.0 J	--	--	--	--
SEMIVOLATILES						
ug/l or ppb						
1,4-Dichlorobenzene		--	1.0 J	--	--	--
Diethylphthalate		3.0 J	--	--	--	--
Di-n-Butylphthalate		1.0 J	1.0 J	--	--	--
bis(2-Ethylhexyl)phthalate		--	1.0 J	--	--	--
PESTICIDES						
ug/l or ppb						
INORGANICS						
ug/l or ppb						
Aluminum		26.8 J	37.3 J	33.1 J	25.8 J	--
Barium		52.6 J	52.6 J	50.8 J	1.0 J	--
Cadmium		1.6	0.9	1.2	--	--
Calcium		422000.0	330000.0	327000.0	355.0 J	--
Cobalt		--	6.6	6.6	--	--
Copper		19.1 J	64.5 J	34.4 J	48.8 J	--
Iron		37500.0	1230.0	1280.0	--	--
Lead		1.8 J	4.9 J	3.8 J	3.2 J	--
Magnesium		108000.0	95600.0	94200.0	77.6 J	--
Manganese		4810.0	254.0	248.0	3.1	--
Nickel		--	27.8	25.4	--	--
Potassium		9580.0	6700.0	6570.0	88.8 J	--
Silver		2.0	--	--	--	--
Sodium		19500.0	47100.0	46500.0	93.1 J	--
Thallium		--	--	4.5 J	--	--
Vanadium		--	3.6	3.7	--	--
Zinc		13.1 J	35.2 J	19.3 J	22.0 J	--
Cyanide		--	3.3 J	3.5 J	--	--

Groundwater samples G101,G102 and G103 were collected from Geoprobe wells located on Pfizer, Inc. property.

Source: Tiered Approach To Corrective Action Objectives (TACO) Tier 1 Class 1 Groundwater objectives.

\* Bold concentrations exceed Class 1 values.

NA - Benchmark Not Available

## 5.2 ECOLOGICAL SEDIMENT SCREENING BENCHMARKS

The sediment samples collected from Schoenberger Creek were compared to ecological benchmarks to help determine whether site activities have adversely impacted ecological systems within the surface water pathway. Two sources of benchmarks were used for this comparison: Ontario sediment quality guidelines and US EPA ecotox thresholds. Ontario sediment quality guidelines are non-regulatory ecological benchmark values that serve as indicators of potential aquatic impacts. Levels of contaminants below Ontario benchmarks indicate a level of pollution which has no effect on the majority of the sediment-dwelling organisms. Contaminants for which no Ontario benchmarks were available were compared to US EPA ecotox thresholds. Ecotox thresholds are ecological benchmarks above which there is sufficient concern regarding adverse ecological effects to warrant further site investigation. Ecotox thresholds are to be used for screening purposes and are not regulatory criteria, site-specific cleanup standards or remediation goals.

Within sediment sample X202, levels of arochlor-1254, dieldrin, arsenic, cadmium, chromium, copper, iron, lead, manganese, silver, nickel, zinc and cyanide were detected above Ontario Sediment Standards. Contaminants detected within sediment X202 exceeded the Ecotox Threshold benchmarks listed in the table below.

SITE NAME: PFIZER INC.		Ontario Sediment Standards				
ILD 006317119						
SAMPLING POINT		LEL	SEL		X201	X202
PARAMETER						
VOLATILES UG\KG (PPB)		--	--			
SEMIVOLATILES UG\KG (PPB)						
Total PAH's		2000.0	11000000.0		780.0 J	62300.0 J
PESTICIDES UG\KG (PPB)						
4,4'-DDE		5.0	19000.0		37.0	33.0
4,4'-DDD		8.0	6000.0		10.0	32.0
4,4'-DDT		7.0	12000.0		12.0	8.0
gamma-Chlorodane		7.0	6000.0		--	6.5 J
dieldrin		2.0	91000.0		5.8 J	20.0 J
Arochlor-1254		60.0	34000.0		--	290.0 J
INORGANICS MG\KG (PPM)						
Arsenic		6.0	33.0		3.3 J	6.9 J
Cadmium		0.6	10.0		2.2	9.3
Chromium		26.0	110.0		36.9 J	150.0 J
Copper		16.0	110.0		24.5 J	50.5 J
Iron		20000.0	40000.0		18900.0	43900.0
Lead		31.0	250.0		38.1	177.0
Manganese		460.0	1100.0		388.0 J	702.0 J
Silver		0.5			1.0	2.6
Nickel		16.0	75.0		18.4 J	22.3 J
Zinc		120.0	820.0		135.0 J	441.0 J
Cyanide		0.1	--		--	0.1 J

Source: GUIDELINES FOR THE PROTECTION AND MANAGEMENT OF AQUATIC SEDIMENT QUALITY IN ONTARIO.

\* LEL - Lowest Effect Level

\* SEL - Severe Effect Level

\* Bold numbers show concentrations which are equal to or exceed a benchmark value.

SITE NAME: PFIZER, INC.		ECOTOX THRESHOLD BENCHMARKS Sediment Samples		
ILD 006317119				
SAMPLING POINT		Ecotox Threshold	X201	X202
PARAMETER				
VOLATILES UG\KG (PPB)				
SEMIVOLATILES UG\KG (PPB)				
Total PAH's		4000.0	780.0 J	62300 J
Acenaphthene		620.0	--	1600.0 J
Phenanthrene		850.0	250.0 J	9900.0 J
Fluoanthene		2900.0	260.0 J	12000.0
Pyrene		660.0	270.0 J	10000.0 J
Benzo(a)pyrene		430.0	--	3100.0 J
PESTICIDES UG\KG (PPB)				
4,4'-DDE		5.0	37.0	33.0
4,4'-DDD		8.0	10.0 J	32.0
4,4'-DDT		1.6	12.0	8.0
Chlorodane		7.0	--	6.5 J
PCB's		23.0	--	290.0 J
INORGANICS MG\KG (PPM)				
Cadmium		1.2	2.2	9.3
Copper		34.0	24.5 J	50.5 J
Lead		47.0	38.1	177.0
Nickel		21.0	18.4 J	22.3 J
Silver		0.5	1.0	2.6
Zinc		150.0	135.0 J	441.0 J

Source: USEPA Ecotox Sediment Screening Benchmarks

\* Bold numbers exceed and or equal the benchmark value.

SITE NAME: PFIZER, INC.		ECOTOX THRESHOLD BENCHMARKS Surface Water		
ILD 006317119				
SAMPLING POINT		Ecotox Threshold	S101	S102
PARAMETER				
VOLATILES UG\KG (PPB)				
SEMIVOLATILES UG\KG (PPB)				
PESTICIDES UG\KG (PPB)				
INORGANICS UG\L (PPB)				
Mercury		1.3	0.8	1.8
Manganese		80.0	406.0	333.0
Iron		1000.0	12600.0	12300.0
Barium		3.9	353.0 J	320.0 J
Copper		11.0	91.2 J	55.0 J
Lead		2.5	7.5 J	6.2 J

Source: USEPA Ecotox Surface Water Screening Benchmarks

\* Bold numbers exceed and or equal the benchmark value.

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**TABLE 1.0**  
**SAMPLE DESCRIPTIONS**

SAMPLE	DEPTH	APPEARANCE	LOCATION
G101	28 Feet	Water was clear with no observed odor noted. ph of the water was checked with ph strips and was 6.0. No TVA readings taken.	Groundwater location selected on the east side of Pickens Pond. 39 feet south of well # 15.
G102\G103	28-29 feet	Groundwater was initially silty but cleared up and remained clear during sample collection. No TVA readings above background.	Groundwater location selected from the northwest corner of the property. 34 feet east of west fence and 30 feet south of the north fence.
S101	Surface water.	High flow of water which is discharged from the property at this location. No TVA readings taken.	Surface water sample taken from a small building on the east side of the property where cooling water is discharged from the facility. Building located south of well # 15.
S102	Surface water.	Water coming out of the surface water discharge pipe had an orange color. No TVA readings taken.	Surface water collected from the discharge pipe coming from Pfizer, Inc. which discharged into Schoenberger Creek.
S103	Surface water.	Water appeared dark in color and smell which resembled organic decay.	Surface water collected approximately 50 yards upstream of the Pfizer discharge pipe. Sample taken from the south bank of Schoenberger Creek.
X101	2-4 inches	Dark loam, area was well vegetated. No TVA reading taken.	Soil sample taken from Jones Park Baseball field located southeast of Pfizer, Inc. 70 feet southwest of Baseball backstop #5 and 67 feet west of Jones Park Access Road.
X102\X103	2-8 inches	Mixture of coal, iron ore, sand, and fill material. TVA Reading: PID -0.3 ppm FID .25 ppm	Sample taken from a pile of material on the northwest corner of property. Taken from the north side of the pile.
X104	2-4 inches	Red and yellow pigment, gravel and construction debris. TVA Reading: PID -0.34 ppm FID .49 ppm	Sample taken from a pile of material located on the northwest corner of property. Taken from the south side of the pile.
X105	0-3 inches	Sand with a very red color.	Sample taken from the north end of Pickens Pond. Collected east of Tank #70.
X106	0-3 inches	Silty material, alot of orange and yellow color material. TVA Reading: PID -0.24 ppm FID -.24 ppm	Sample taken from approximately the midpoint of Pickens Pond.
X107	0-3 inches	The ph of the water discharging into the sanitary sewer was 7.0.	Sample taken at the south end of Pickens Pond. Point where surface water discharges into the municipal sewer system.
X108	0-3 inches	Silty organic material, orange in color. Cattail roots and organic material observed.	Sample collected from a wetland area located outside Pfizer fence near the northwest corner of the property.
X109	0-3 inches	Silty clay, orange-brown in color. Bright yellow pigment.	Sample taken from wetland area located outside Pfizer's fence, near the northwest corner of building #630.
X201	0-2 inches	Sediment sample dark in color and smelled like organic decay. Creek was concrete lined.	Sample taken from the south side of Schoenberger Creek, approximately 50 yards upstream of where Pfizer discharges surface water.
X202	0-2 inches	Sediment dark in color and smelled like organic decay. Orange iron precipitate observed in sediments. The creek was lined in concrete.	Sample taken from the location where Pfizer, Inc. discharges surface water through a pipe, into Schoenberger Creek.

SITE NAME: PFIZER, INC.

ILD006317119

TABLE 2.0  
SOIL/SEDIMENT SAMPLES

SAMPLING POINT	X101	X102	X103	X104	X105	X106	X107	X108	X109	X201	X202
PARAMETER	Backgrd.										
<b>VOLATILES ug/kg (ppb)</b>											
Methylene Chloride	17.0	—	25.0 J	9.0 J	5.0 J	7.0 J	4.0 J	21.0 J	10.0 J	6.0 J	9.0 J
Acetone	—	—	—	—	—	—	—	—	—	—	62.0 J
Chloroform	—	—	—	—	—	—	—	—	3.0 J	—	—
2-Butanone (MEK)	—	—	—	—	—	—	—	—	—	—	—
Toluene	—	4.0 J	—	—	—	—	—	—	—	7.0 J	—
Xylene(total)	—	—	—	—	—	—	—	—	—	—	—
<b>SEMIVOLATILES ug/kg (ppb)</b>											
1,4-Dichlorobenzene	—	—	—	—	—	—	—	—	—	—	—
Naphthalene	—	3200.0 J	2600.0 J	690.0 J	—	—	400.0 J	—	—	—	—
2-Methylnaphthalene	—	7600.0 J	7800.0 J	1500.0 J	—	—	650.0 J	—	—	—	—
Dimethylphthalate	—	—	—	—	4500.0	—	—	—	—	—	—
Acenaphthene	—	—	—	—	—	—	—	—	—	—	1600.0 J
Dibenzofuran	—	—	2900.0 J	410.0 J	—	—	530.0 J	—	—	—	—
Diethylphthalate	—	—	—	—	—	—	—	—	—	—	—
Fluorene	—	—	—	—	—	—	—	—	—	—	2500.0 J
Phenanthrene	120.0 J	2900.0 J	3600.0 J	1400.0 J	960.0 J	670.0 J	2700.0	—	1000.0 J	250.0 J	9900.0 J
Anthracene	—	—	—	—	—	—	510.0 J	—	—	—	2400.0 J
Di-n-Butylphthalate	—	—	—	—	—	—	—	—	—	—	—
Fluoranthene	170.0 J	—	—	460.0 J	2300.0	770.0 J	2400.0	580.0 J	1600.0 J	260.0 J	12000.0
Pyrene	130.0 J	—	—	490.0 J	2500.0	740.0 J	2400.0	—	1700.0 J	270.0 J	10000.0 J
Benzo(a)anthracene	71.0 J	—	—	230.0 J	1200.0 J	360.0 J	970.0 J	—	820.0 J	—	4300.0 J
Chrysene	99.0 J	—	—	300.0 J	1300.0 J	380.0 J	1000.0 J	—	1000.0 J	—	4500.0 J
bis(2-Ethylhexyl)phthalate	—	—	—	—	—	—	—	—	1400.0 J	—	2300.0 J
Benzo(b)fluoranthene	150.0 J	—	—	260.0 J	1700.0 J	540.0 J	1300.0 J	—	1400.0 J	—	4400.0 J
Benzo(k)fluoranthene	48.0 J	—	—	—	730.0 J	340.0 J	360.0 J	—	—	—	2200.0 J
Benzo(a)pyrene	71.0 J	—	—	—	980.0 J	340.0 J	830.0 J	—	760.0 J	—	3100.0 J
Indeno(1,2,3-cd)pyrene	61.0 J	—	—	—	740.0 J	330.0 J	440.0 J	—	—	—	1700.0 J
Benzo(g,h,i)perylene	58.0 J	—	—	—	530.0 J	320.0 J	370.0 J	—	—	—	1400.0 J
<b>PESTICIDES ug/kg (ppb)</b>											
gamma-BHC (Lindane)	—	—	—	—	—	—	—	—	16.0 J	—	—
Heptachlor epoxide	—	4.8 J	6.6 J	—	—	—	—	—	—	—	—
Dieldrin	17.0	7.1 J	11.0 J	—	—	—	5.1 J	43.0 J	26.0 J	5.8 J	20.0 J
4,4'-DDE	—	4.4 J	—	—	—	—	—	—	—	37.0	33.0
Endosulfan II	—	12.0 J	6.4 J	—	—	—	10.0 J	—	—	—	—
4,4'-DDD	—	—	—	—	—	—	—	—	—	10.0 J	32.0
4,4'-DDT	—	—	—	—	—	—	—	—	—	12.0	8.0
Endrin Ketone	—	6.5 J	6.0 J	—	—	—	—	—	—	—	—
alpha-Chlorodane	—	3.3 J	—	—	—	—	—	—	—	—	—
gamma-Chlorodane	—	15.0 J	15.0 J	—	—	—	—	—	—	—	6.5 J
Aroclor-1254	—	—	—	—	100.0 J	—	—	66.0 J	90.0 J	—	290.0 J
<b>INORGANICS mg/kg (ppm)</b>											
Aluminum	12900.0	2510.0	2320.0	2840.0	5470.0	4950.0	11000.0	5970.0	3790.0	9720.0	10400.0
Antimony	—	14.5 J	12.0 J	3.8 J	3.6 J	2.4 J	2.9 J	—	3.2 J	—	—
Arsenic	3.9 J	43.6 J	41.9 J	10.2 J	5.6 J	7.2 J	7.4 J	26.7 J	1.4	3.3 J	6.9 J
Barium	316.0	3040.0	2550.0	2580.0	3730.0	16400.0	6020.0	7900.0	9890.0	197.0	387.0
Beryllium	0.7	0.3	0.4	0.2	0.3	0.3	0.9	0.6	0.3	0.6	1.2
Cadmium	1.7	4.8	4.5	8.1	5.5	15.4	4.7	8.3	14.1	2.2	9.3
Calcium	6090.0 J	3860.0 J	4030.0 J	31800.0 J	3660.0 J	36600.0 J	22600.0 J	5530.0 J	15400.0 J	14500.0 J	43700.0 J
Chromium	16.2 J	2570.0 J	2140.0 J	636.0 J	646.0 J	432.0 J	96.8 J	466.0 J	625.0 J	36.9 J	150.0 J
Cobalt	9.6	13.6	12.8	30.4	15.3	81.2	25.7	44.5	91.3	7.2	7.7
Copper	28.6 J	578.0 J	527.0 J	193.0 J	241.0 J	178.0 J	101.0 J	214.0 J	180.0 J	24.5 J	50.5 J
Iron	18200.0	—	—	199000.0	—	—	70200.0	303000.0	—	18900.0	43900.0
Lead	81.8	185.0	168.0	134.0	212.0	185.0	282.0	401.0	178.0	38.1	177.0
Magnesium	3300.0 J	423.0 J	431.0 J	2040.0 J	1770.0 J	3220.0 J	2630.0 J	1070.0 J	1950.0 J	4390.0 J	6120.0 J
Manganese	491.0 J	206.0 J	200.0 J	364.0 J	384.0 J	4000.0 J	1480.0 J	376.0 J	704.0 J	388.0 J	702.0 J
Mercury	—	0.4	0.5	0.2	—	0.8	0.3	1.6	2.9	—	—
Nickel	20.9 J	150.0 J	134.0 J	56.3 J	70.9 J	158.0 J	51.2 J	124.0 J	108.0 J	18.4 J	22.3 J
Potassium	2650.0 J	552.0 J	552.0 J	687.0 J	1060.0 J	895.0 J	1510.0 J	1180.0 J	430.0 J	1960.0 J	1690.0 J
Selenium	1.2 J	7.1	8.9	6.3	7.6	11.4	4.5 J	17.8	11.4	1.4 J	2.8 J
Silver	1.1	6.4	6.4	2.8	6.5	7.0	3.9	14.6	6.0	1.0	2.6
Sodium	139.0 J	461.0	479.0	1450.0	1460.0	1540.0	2550.0	862.0 J	621.0 J	327.0 J	441.0 J
Thallium	0.8	0.7	0.8	0.6	0.8	1.1	0.8	2.7	1.0	1.0	1.2
Vanadium	28.7	78.3	64.4	22.2	34.4	21.9	33.3	43.4	21.3	25.2	26.1
Zinc	171.0 J	244.0 J	221.0 J	258.0 J	246.0 J	565.0 J	418.0 J	1030.0 J	3440.0 J	135.0 J	441.0 J
Cyanide	0.7 J	0.1 J	0.1 J	0.4 J	0.1 J	0.8 J	2.6 J	0.6 J	0.2 J	—	0.1 J

SITE NAME: PFIZER, INC.

D 006317119

TABLE 2-1  
WATER SAMPLES

SAMPLING POINT	G101	G102	G103	S101	S102	S103	F.B.	T.B.
PARAMETER								
VOLATILES UG/L (PPB)								
Methylene Chloride	1.0 J	-	-	-	-	-	6.0 J	- J
Acetone	5.0 J	-	-	4.0 J	17.0 J	36.0 J	-	5.0 J
Chloroform	-	-	-	-	-	1.0 J	-	-
2-Butanone (MEK)	1.0 J	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	2.0 J	-	-
Xylene(total)	-	-	-	-	-	5.0 J	-	-
SEMIVOLATILES UG/L (PPB)								
1,4-Dichlorobenzene	-	1.0 J	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	2.0 J	-	-
2-Methylnaphthalene	-	-	-	-	-	-	-	-
Dimethylphthalate	-	-	-	-	-	-	-	-
Acenaphthene	-	-	-	-	-	-	-	-
Dibenzofuran	-	-	-	-	-	-	-	-
Diethylphthalate	3.0 J	-	-	-	-	2.0 J	-	-
Fluorene	-	-	-	-	-	-	-	-
Phenanthrene	-	-	-	-	-	-	-	-
Anthracene	-	-	-	-	-	-	-	-
Di-n-Butylphthalate	1.0 J	1.0 J	-	1.0 J	-	-	-	-
Fluoranthene	-	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-
Chrysene	-	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate	-	1.0 J	-	35.0	-	-	-	-
Benzo(b)fluoranthene	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	-	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-
ESTICIDES UG/L (PPB)								
gamma-BHC (Lindane)	-	-	-	-	-	-	-	-
Heptachlor epoxide	-	-	-	-	-	-	-	-
Dieldrin	-	-	-	-	-	-	-	-
4,4'-DDE	-	-	-	-	-	-	-	-
Endosulfan II	-	-	-	-	-	-	-	-
4,4'-DDD	-	-	-	-	-	-	-	-
4,4'-DDT	-	-	-	-	-	-	-	-
Endrin Ketone	-	-	-	-	-	-	-	-
alpha-Chlorodane	-	-	-	-	-	-	-	-
gamma-Chlorodane	-	-	-	-	-	-	-	-
Aroclor-1254	-	-	-	-	-	-	-	-
INORGANICS UG/L (PPB)								
Aluminum	26.8 J	37.3 J	33.1 J	32.5 J	156.0 J	2280.0	25.8 J	-
Antimony	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-
Barium	52.6 J	52.6 J	50.8 J	353.0 J	320.0 J	104.0 J	1.0 J	-
Beryllium	-	-	-	-	-	-	-	-
Cadmium	1.6	0.9	1.2	0.5	0.7	1.1	-	-
Calcium	422000.0	330000.0	327000.0	157000.0	144000.0	51000.0	355.0 J	-
Chromium	-	-	-	-	1.2 J	14.0	-	-
Cobalt	-	6.6	6.6	-	-	1.4	-	-
Copper	19.1 J	64.5 J	34.4 J	91.2 J	55.0 J	30.3 J	48.8 J	-
Iron	37500.0	1230.0	1280.0	12600.0	12300.0	3280.0	-	-
Lead	1.8 J	4.9 J	3.8 J	7.5 J	6.2 J	22.0 J	3.2 J	-
Magnesium	108000.0	95600.0	94200.0	44800.0	40400.0	12600.0	77.6 J	-
Manganese	4810.0	254.0	248.0	406.0	333.0	282.0	3.1	-
Mercury	-	-	-	0.8	1.8	-	-	-
Nickel	-	27.8	25.4	1.3	-	5.5	-	-
Potassium	9580.0	6700.0	6570.0	8120.0	7550.0	9900.0	88.8 J	-
Selenium	-	-	-	-	-	-	-	-
Silver	2.0	-	-	-	-	-	-	-
Sodium	19500.0	47100.0	46500.0	26000.0	24800.0	104000.0	93.1 J	-
Thallium	-	-	4.5 J	3.5 J	-	-	-	-
Vanadium	-	3.6	3.7	-	-	7.9	-	-
Zinc	13.1 J	35.2 J	19.3 J	56.2	30.0 J	107.0	22.0 J	-
Cyanide	-	3.3 J	3.5 J	-	2.1 J	2.7 J	-	-



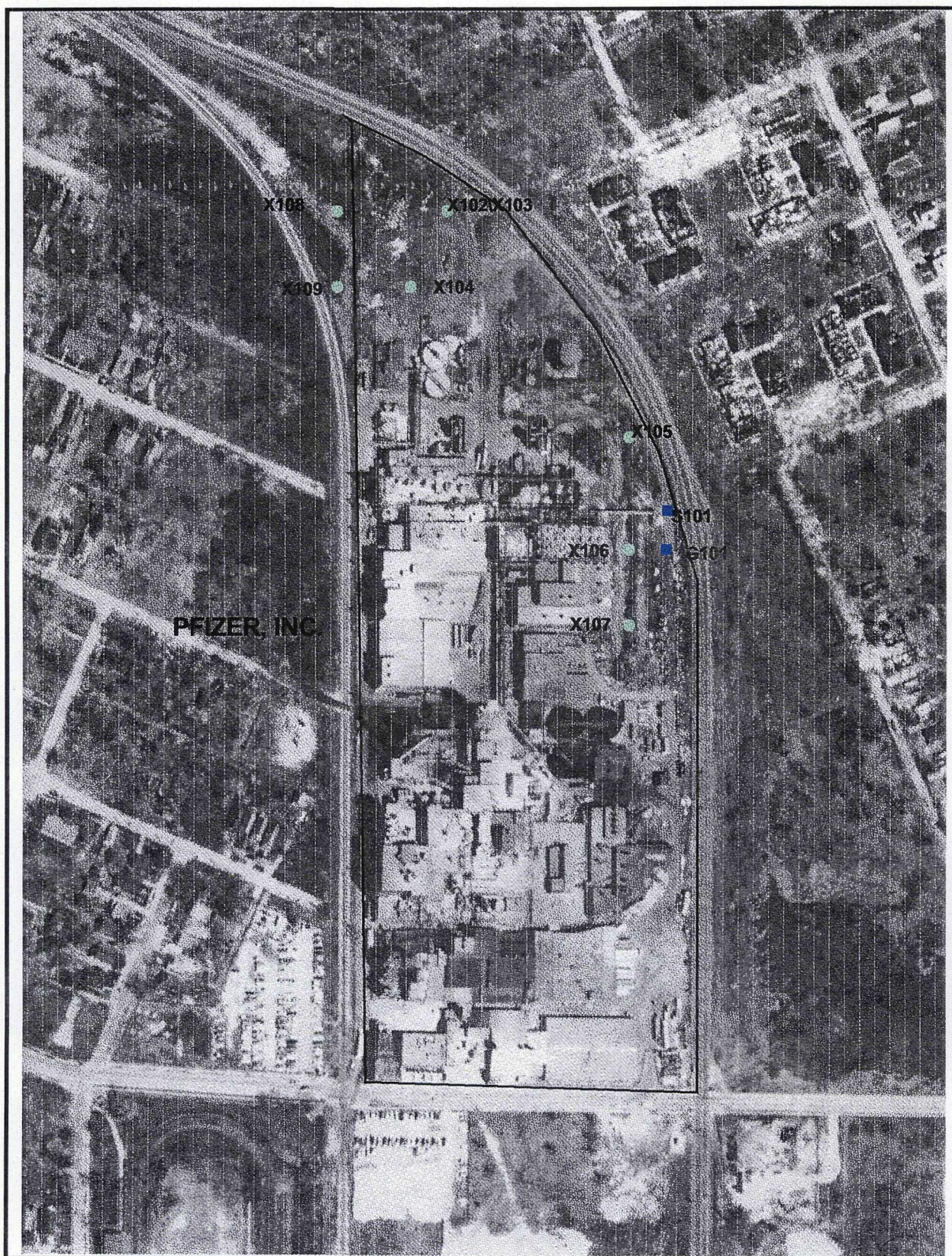
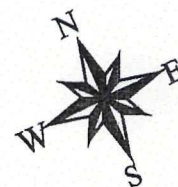


FIGURE 1 SAMPLE LOCATION MAP  
PFIZER, INC.  
SOURCE: IL. DEPARTMENT OF TRANSPORTATION  
SCALE: 1 inch = 250 feet 4-7-88



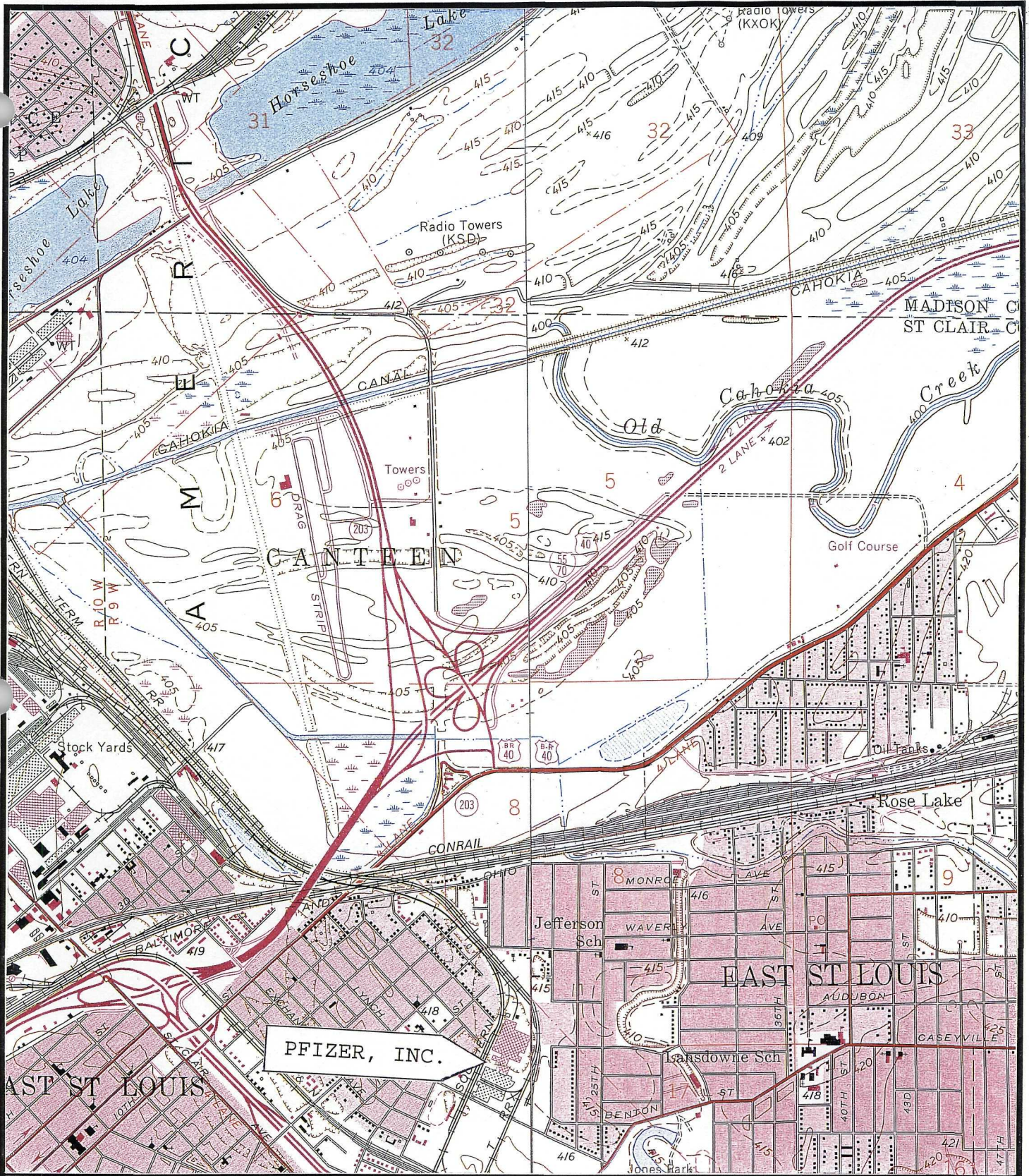




Pfizer, Inc. Off-site Sample Map







SITE LOCATION MAP



PFIZER, INC EAST ST. LOUIS, ILLINOIS

FIGURE 2

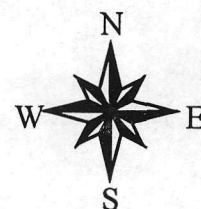




**PFIZER, INC.**

# **SITE LOCATION MAP**

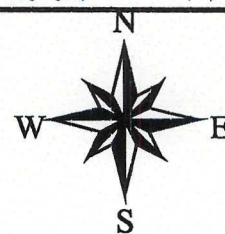
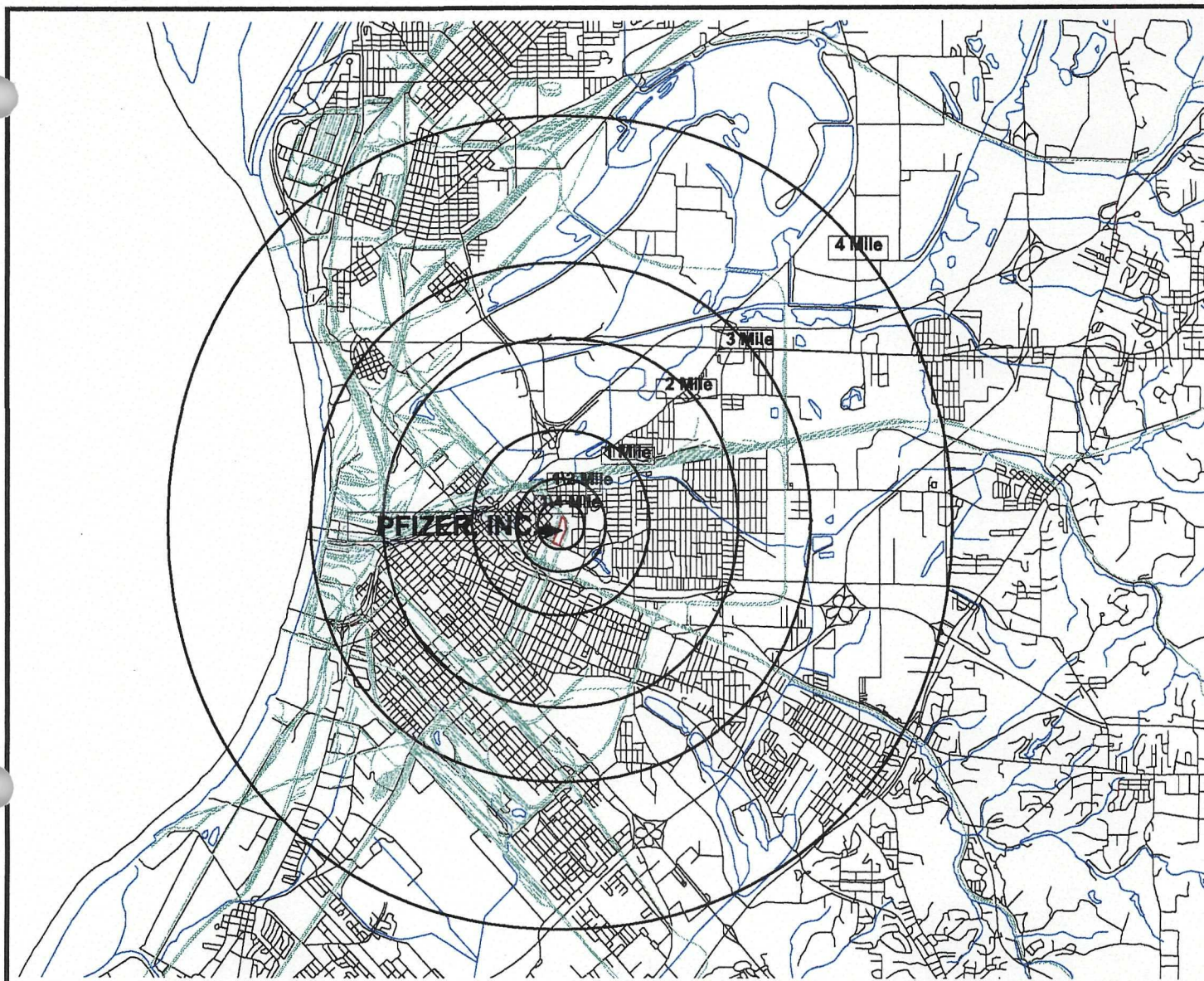
**FIGURE 3**



Appendix A

4-MILE RADIUS  
&  
SURFACE WATER MAP

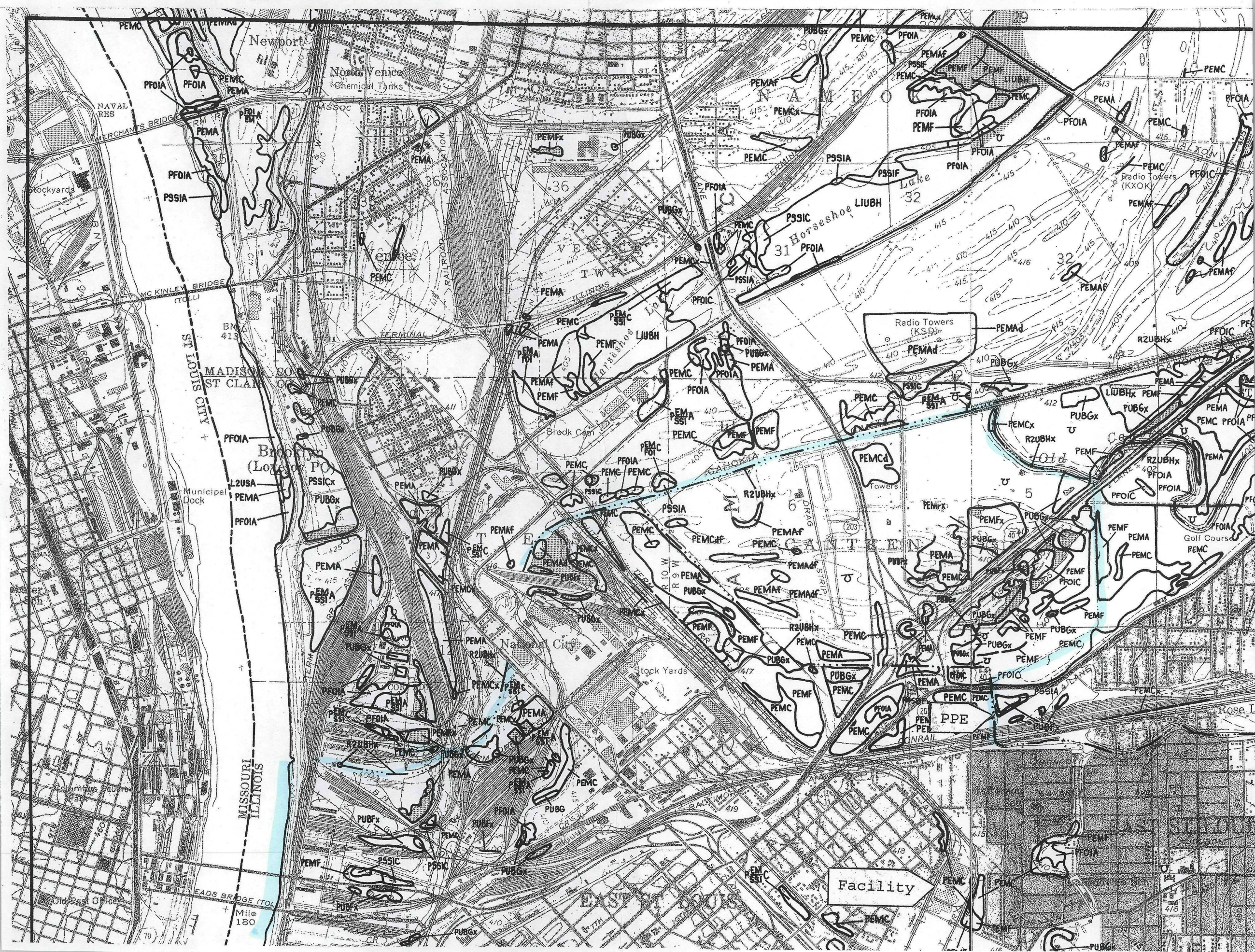




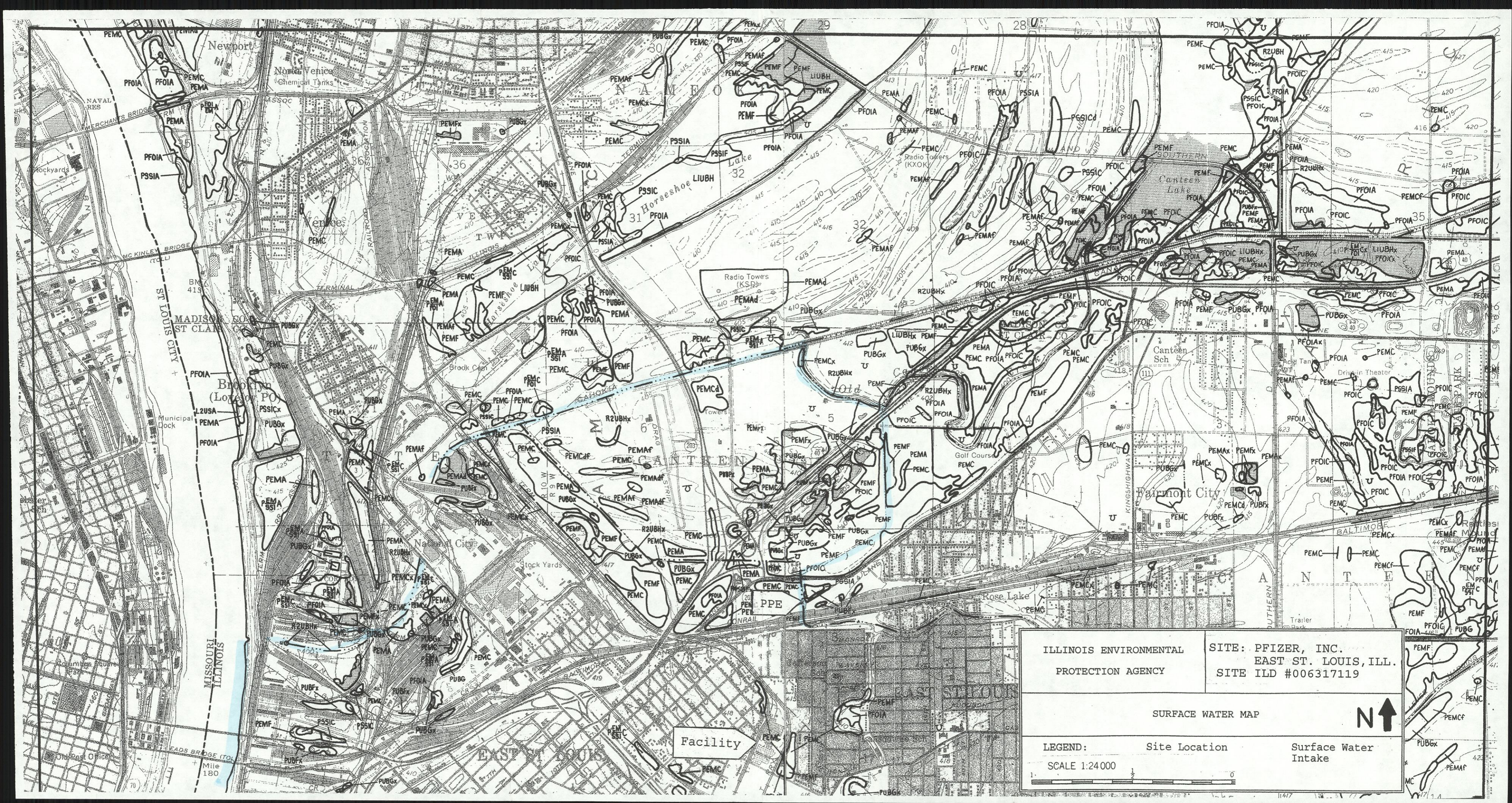
# PFIZER, INC. 4 MILE RADIUS MAP











ILLINOIS ENVIRONMENTAL PROTECTION AGENCY		SITE: PFIZER, INC. EAST ST. LOUIS, ILL. SITE ILD #006317119	
SURFACE WATER MAP			
LEGEND:		Site Location	Surface Water Intake
SCALE 1:24000			



## Appendix B

### Target Compound List

## DATA QUALIFIERS

QUALIFIER	DEFINITION ORGANICS	DEFINITION INORGANICS
U	Compound was tested for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL is also multiplied by two, to account for the fact that only half of the extract is recovered.	Analyte was analyzed for but not detected.
J	Estimated value. Used when estimating a concentration for tentatively identified compounds (TICS) where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria and the result is less than the sample quantitation limit but greater than zero. Used in data validation when the quality control data indicate that a value may not be accurate.	Estimated value. Used in data validation when the quality control data indicate that a value may not be accurate.
C	This flag applies to pesticide results where the identification is confirmed by GC/MS.	Method qualifier indicates analysis by the Manual Spectrophotometric method.
B	Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.	The reported value is less than the CRDL but greater than the instrument detection limit (IDL).
D	Identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor as in the "E" flag, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and <u>all</u> concentration values are flagged with the "D" flag.	Not used.
E	Identifies compounds whose concentrations exceed the calibration range for that specific analysis. All extracts containing compounds exceeding the calibration range must be diluted and analyzed again. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses must be reported on separate Forms I. The Form I for the diluted sample must have the "DL" suffix appended to the sample number.	The reported value is estimated because of the presence of interference.
A	This flag indicates that a TIC is a suspected aldol concentration product formed by the reaction of the solvents used to process the sample in the laboratory.	Method qualifier indicates analysis by Flame Atomic Absorption (AA).
M	Not used.	Duplicate injection (a QC parameter not met).

N	Not used	Spiked sample (a QC parameter not met).
S	Not used.	The reported value was determined by the Method of Standard Additions (MSA).
W	Not used.	Post digestion spike for Furnace AA analysis (a QC parameter) is out of control limits of 85% to 115% recovery, while sample absorbance is less than 50% of spike absorbance.
*	Not used.	Duplicate analysis (a QC parameter not within control limits).
+	Not used.	Correlation coefficient for MSA (a QC parameter) is less than 0.995.
P	Not used.	Method qualifier indicates analysis by ICP (Inductively Coupled Plasma) Spectroscopy.
CV	Not used.	Method qualifier indicates analysis by Cold Vapor AA.
AV	Not used.	Method qualifier indicates analysis by Automated Cold Vapor AA.
AS	Not used.	Method qualifier indicates analysis by Semi-Automated Cold Spectrophotometry.
T	Not used.	Method qualifier indicates Titrimetric analysis.
NR	The analyte was not required to be analyzed.	The analyte was not required to be analyzed.
R	Rejected data. The QC parameters indicate that the data is not usable for any purpose.	Rejected data. The QC parameters indicate that the data is not usable for any purpose.

## **TARGET COMPOUND LIST**

### **Volatile Target Compounds**

Chloromethane	1,2-Dichloropropane
Bromomethane	cis-1,3-Dichloropropene
Vinyl Chloride	Trichloroethene
Chloroethane	Dibromochloromethane
Methylene Chloride	1,1,2-Trichloroethane
Acetone	Benzene
Carbon Disulfide	trans-1,3-Dichloropropene
1,1-Dichloroethene	Bromoform
1,1-Dichloroethane	4-Methyl-2-pentanone
1,2-Dichloroethene (total)	2-Hexanone
Chloroform	Tetrachloroethene
1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
2-Butanone	Toluene
1,1,1-Trichloroethane	Chlorobenzene
Carbon Tetrachloride	Ethylbenzene
Vinyl Acetate	Styrene
Bromodichloromethane	Xylenes (total)

### **Base/Neutral Target Compounds**

Hexachloroethane	2,4-Dinitrotoluene
bis(2-Chloroethyl) Ether	Diethylphthalate
Benzyl Alcohol	N-Nitrosodiphenylamine
bis (2-Chloroisopropyl) Ether	Hexachlorobenzene
N-Nitroso-Di-n-Propylamine	Phenanthrene
Nitrobenzene	4-Bromophenyl-phenylether

Hexachlorobutadiene	Anthracene
2-Methylnaphthalene	Di-n-Butylphthalate
1,2,4-Trichlorobenzene	Fluoranthene
Isophorone	Pyrene
Naphthalene	Butylbenzylphthalate
4-Chloroaniline	bis(2-Ethylhexyl)Phthalate
bis(2-chloroethoxy)Methane	Chrysene
Hexachlorocyclopentadiene	Benzo(a)Anthracene
2-Chloronaphthalene	3-3'-Dichlorobenzidene
2-Nitroaniline	Di-n-Octyl Phthalate
Acenaphthylene	Benzo(b)Fluoranthene
3-Nitroaniline	Benzo(k)Fluoranthene
Acenaphthene	Benzo(a)Pyrene
Dibenzofuran	Ideno(1,2,3-cd)Pyrene
Dimethyl Phthalate	Dibenz(a,h)Anthracene
2,6-Dinitrotoluene	Benzo(g,h,i)Perylene
Fluorene	1,2-Dichlorobenzene
4-Nitroaniline	1,3-Dichlorobenzene
4-Chlorophenyl-phenylether	1,4-Dichlorobenzene

#### Acid Target Compounds

Benzoic Acid	2,4,6-Trichlorophenol
Phenol	2,4,5-Trichlorophenol
2-Chlorophenol	4-Chloro-3-methylphenol
2-Nitrophenol	2,4-Dinitrophenol
2-Methylphenol	2-Methyl-4,6-dinitrophenol
2,4-Dimethylphenol	Pentachlorophenol
4-Methylphenol	4-Nitrophenol
2,4-Dichlorophenol	



### Pesticide/PCB Target Compounds

alpha-BHC	Endrin Ketone
beta-BHC	Endosulfan Sulfate
delta-BHC	Methoxychlor
gamma-BHC (Lindane)	alpha-Chlordane
Heptachlor	gamma-Chlordane
Aldrin	Toxaphene
Heptachlor epoxide	Aroclor-1016
Endosulfan I	Aroclor-1221
4,4'-DDE	Aroclor-1232
Dieldrin	Aroclor-1242
Endrin	Aroclor-1248
4,4'-DDD	Aroclor-1254
Endosulfan II	Aroclor-1260
4,4'-DDT	

### Inorganic Target Compounds

Aluminum	Manganese
Antimony	Mercury
Arsenic	Nickel
Barium	Potassium
Beryllium	Selenium
Cadmium	Silver
Calcium	Sodium
Chromium	Thallium
Cobalt	Vanadium
Copper	Zinc

Iron	Cyanide
Lead	Sulfide
Magnesium	

## Appendix C

### Site Team Evaluation Prioritization Photographs

**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 2, 1997

**TIME:** 10:50 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X104

**DIRECTION:** North

**COMMENTS:** Photograph looking toward piles of material located near the northwest corner of the property.



**DATE:** Dec. 2, 1997

**TIME:** 10:50 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X104

**DIRECTION:** East

**COMMENTS:** Photograph looking at the red and yellow pigments in the piles.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 2, 1997

**TIME:** 11:00 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X102 & X103

**DIRECTION:** South

**COMMENTS:** Photograph looking at pile of waste material on the northwest corner of the property.



**DATE:** Dec. 2, 1997

**TIME:** 11:00 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X102 & X103

**DIRECTION:** East

**COMMENTS:** Photograph looking at the north end of the waste pile.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 2, 1997

**TIME:** 11:00 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** G102 & G103

**DIRECTION:** South

**COMMENTS:** Photograph showing manufacturing buildings in relation to the groundwater sample location.



**DATE:** Dec. 2, 1997

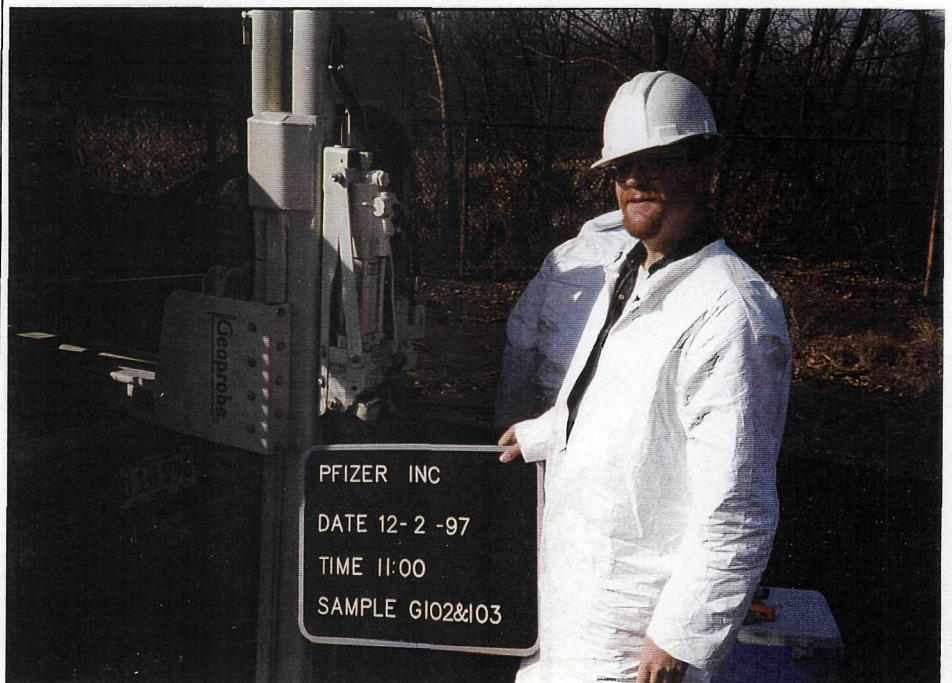
**TIME:** 11:00 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** G102 & G103

**DIRECTION:** East

**COMMENTS:** Photograph looking toward the west fence line.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 2, 1997

**TIME:** 11:45 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X108

**DIRECTION:** South

**COMMENTS:** Photograph looking at a wetland area west of the facility property.



**DATE:** Dec. 2, 1997

**TIME:** 11:45 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X108

**DIRECTION:** East

**COMMENTS:** Photograph looking toward fence line on the west side of the facility property.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 2, 1997

**TIME:** 12:10 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** X109

**DIRECTION:** North

**COMMENTS:** Photograph looking toward the wetland area located on the west side of the facility property.



**DATE:** Dec. 2, 1997

**TIME:** 12:10 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** X109

**DIRECTION:** East

**COMMENT:** Photograph looking toward west fence line on the west side of facility property. Building 630 located in background.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 2, 1997

**TIME:** 1:45 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** X105

**DIRECTION:** West

**COMMENTS:** Photograph looking toward Building 1.



**DATE:** Dec. 2, 1997

**TIME:** 1:45 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** X105

**DIRECTION:** South

**COMMENT:** Photograph looking toward the south end of Pickens Pond.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 2, 1997

**TIME:** 2:10 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** X106

**DIRECTION:** West

**COMMENTS:** Photograph showing Pickens Pond in relation to Building 700 manufacturing facility.



**DATE:** Dec. 2, 1997

**TIME:** 2:10 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** X106

**DIRECTION:** South

**COMMENT:** Photograph looking toward the southern end of Pickens Pond.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 2, 1997

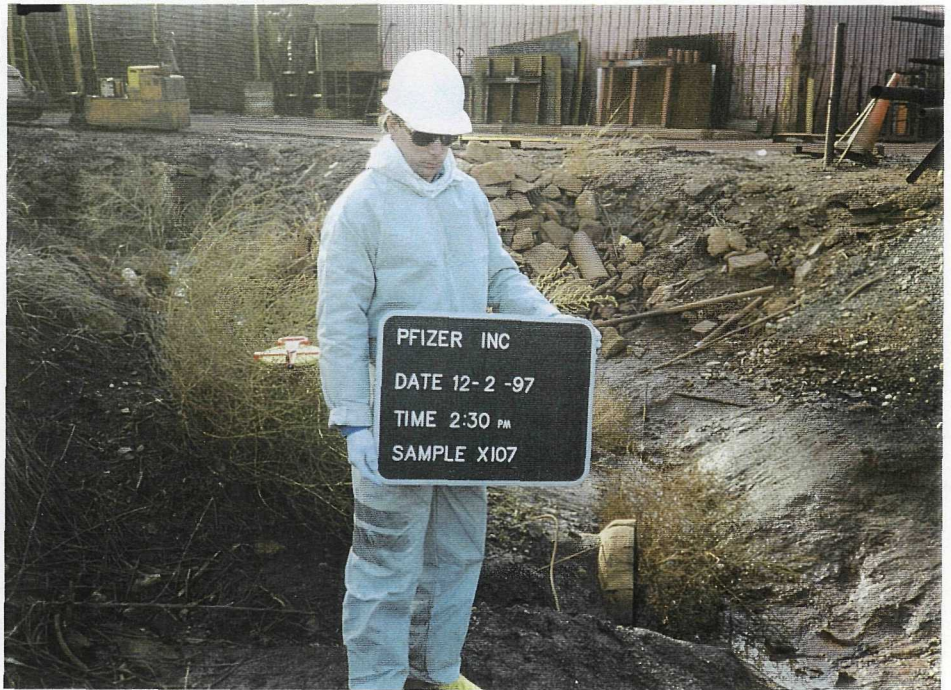
**TIME:** 2:30 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** X107

**DIRECTION:** West

**COMMENTS:** Photograph showing the discharge point where surface water from Pickens Pond enters East St. Louis municipal sewer system.



**DATE:** Dec. 2, 1997

**TIME:** 2:30 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** X107

**DIRECTION:** South

**COMMENT:** Photograph looking at culvert which discharges surface water from Pickens Pond to East St. Louis sewer system.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 2, 1997

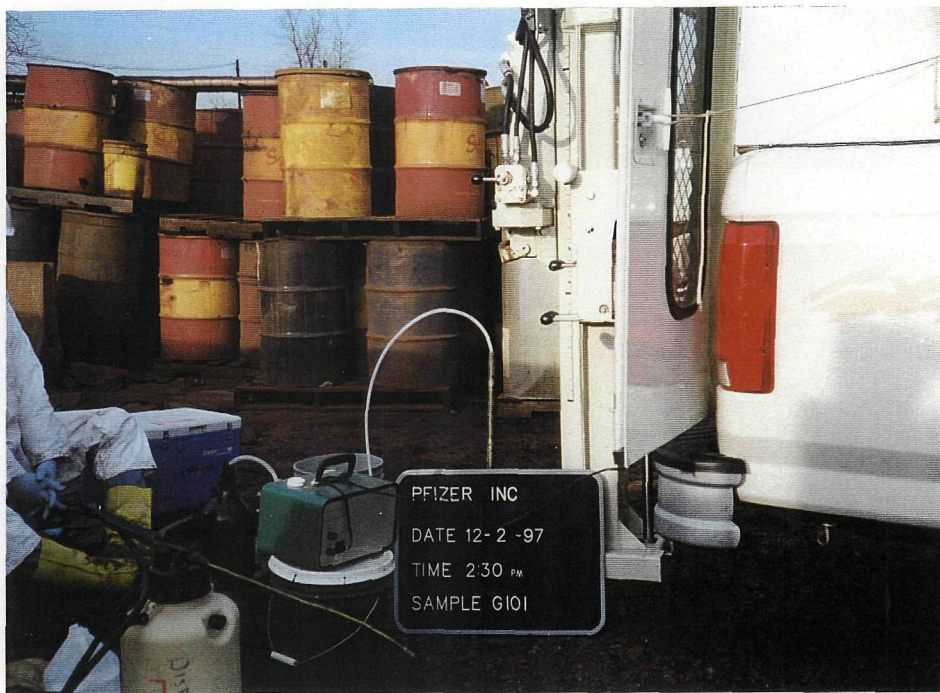
**TIME:** 2:30 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** G101

**DIRECTION:** North

**COMMENTS:** Photograph showing location of the Geoprobe groundwater sample with drums in background of the photo.



**DATE:** Dec. 2, 1997

**TIME:** 2:30 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** G101

**DIRECTION:** East

**COMMENT:** Photograph showing the Geoprobe groundwater sample location. The east property fence line is shown in the background.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 2, 1997

**TIME:** 3:00 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** S101

**DIRECTION:**

**COMMENTS:** Photograph taken in the building where surface water from the facility discharges into a pipe which goes to Schoenberger Creek.



**DATE:** Dec. 2, 1997

**TIME:** 3:00 pm

**PHOTO BY:** Brad Taylor

**SAMPLE:** S101

**DIRECTION:** South

**COMMENT:** Photograph showing the building where all surface water used within facility operations flows before leaving the property.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 3, 1997

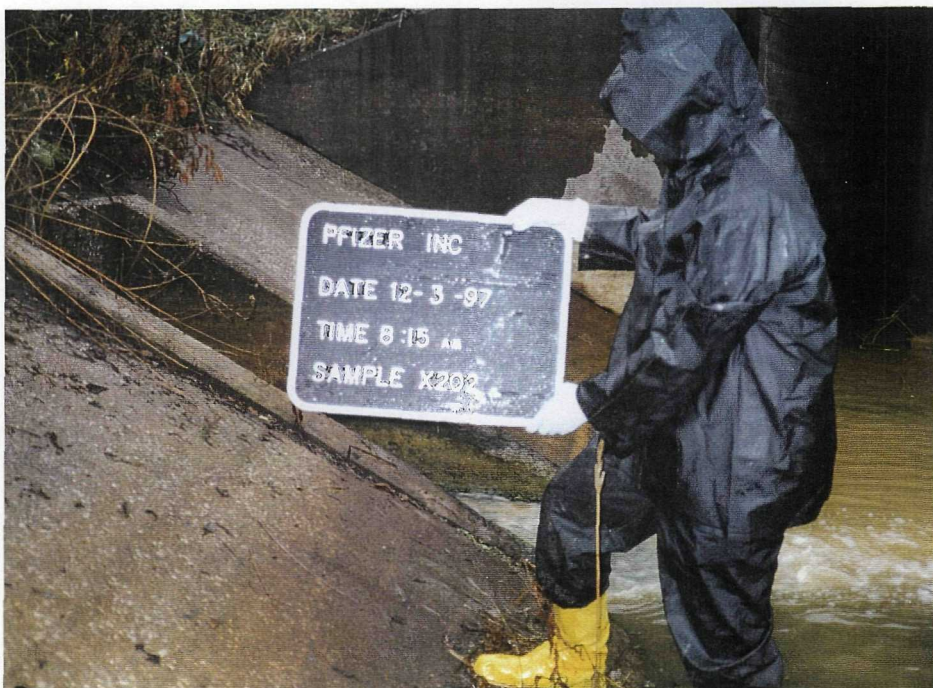
**TIME:** 8:15 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X202

**DIRECTION:** North

**COMMENTS:** Photograph showing the discharge point where surface water from Pfizer, Inc. enters Schoenberger Creek.



**DATE:** Dec. 3, 1997

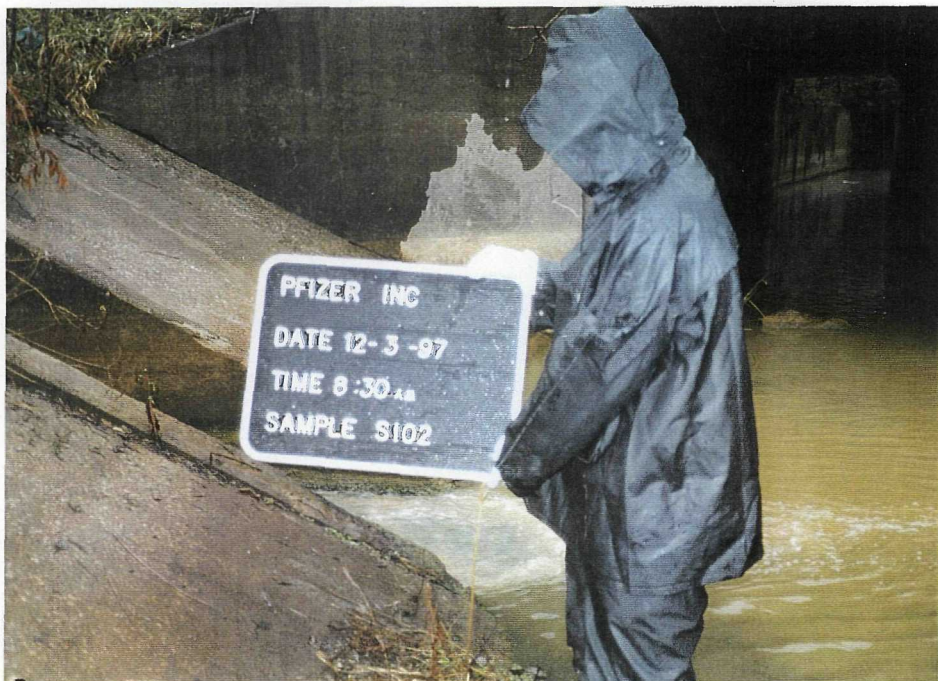
**TIME:** 8:30 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** S102

**DIRECTION:** North

**COMMENT:** Photograph showing the discharge of surface water from Pfizer, Inc. to Schoenberger Creek.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 3, 1997

**TIME:** 9:00 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X201 & S103

**DIRECTION:** North

**COMMENTS:** Photograph showing Schoenberger Creek. This location was upstream of the discharge water from Pfizer, Inc.



**DATE:** Dec. 3, 1997

**TIME:** 9:00 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X201 & S103

**DIRECTION:** West

**COMMENT:** Photograph looking at Schoenberger Creek with the discharge pipe from Pfizer, Inc. in the background.





**SITE NAME:** PFIZER, INC.

**CERCLIS ID:** ILD 006317119

**COUNTY:** ST. CLAIR

**DATE:** Dec. 3, 1997

**TIME:** 10:15 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X101

**DIRECTION:** North

**COMMENTS:** Photograph showing a baseball field with the Pfizer, visible in the background of the photo.



**DATE:** Dec. 3, 1997

**TIME:** 10:15 am

**PHOTO BY:** Brad Taylor

**SAMPLE:** X101

**DIRECTION:** East

**COMMENT:** Photograph showing baseball field fence backstop with park access road in background.



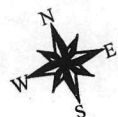


## Appendix D

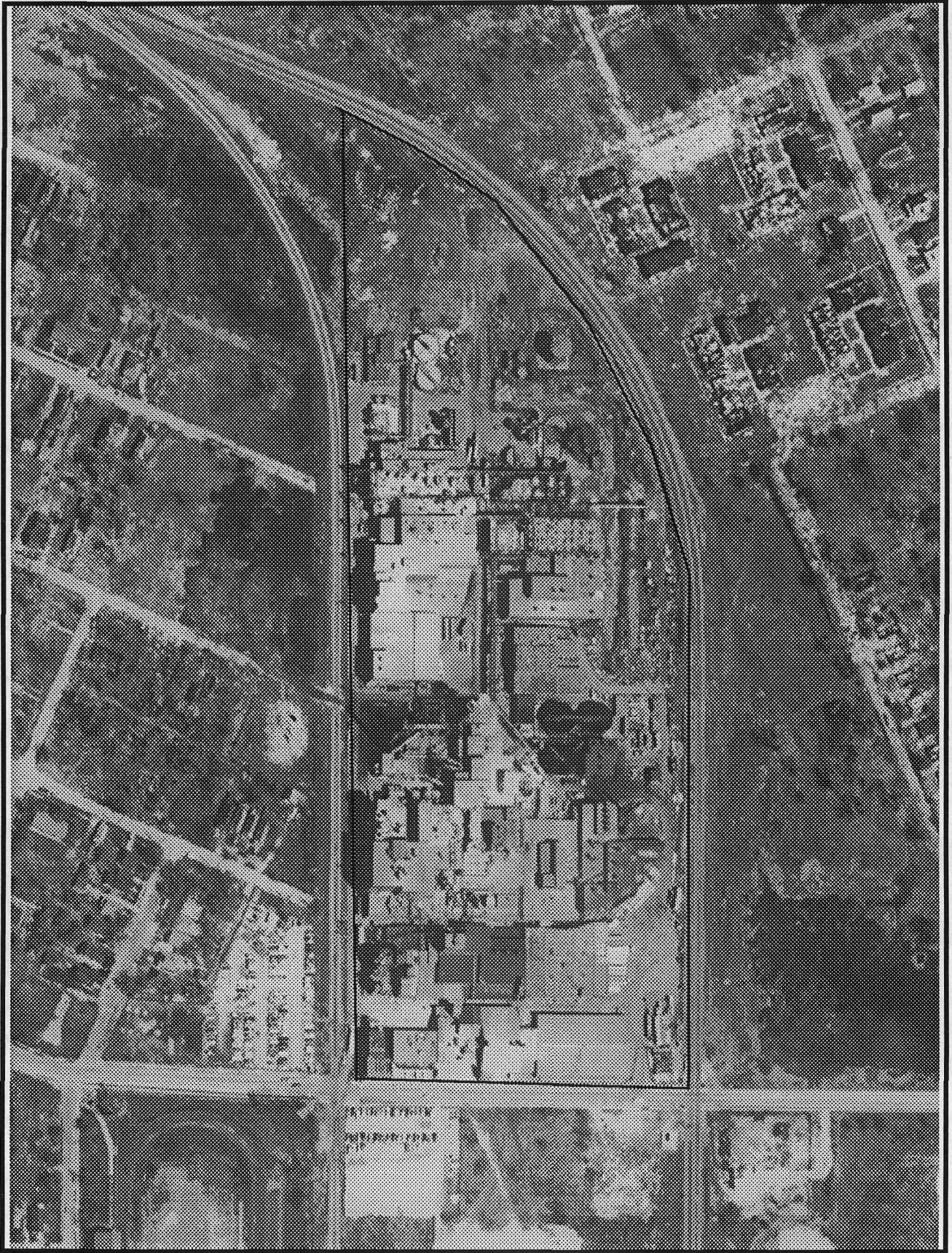
Aerial Photograph Location Map of Pfizer, Inc.



AERIAL PHOTOGRAPH LOCATION MAP  
PFIZER, INC.  
SOURCE: IL. DEPARTMENT OF TRANSPORTATION  
SCALE: 1 inch = 200 feet 6-13-56







AERIAL PHOTOGRAPH LOCATION MAP  
PFIZER, INC.  
SOURCE: IL. DEPARTMENT OF TRANSPORTATION  
SCALE: 1 inch = 250 feet 4-7-88

